AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-5. (cancelled)

Claim 6. (currently amended) The method of claim ~~2~~ 8 wherein said plurality of layers includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure.

Claim 7. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer;

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate; and

repeating one or more additional applying and drying sequence with a water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species, so that a predetermined plurality of layers are built up upon said substrate, ~~The method of claim 2 wherein~~ said plurality of layers ~~includes~~ including multiple trilayers having a polycationic layer/polyanionic layer/uncharged polymer layer structure.

Claim 8. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, ~~The method of claim 1~~ wherein said drying steps comprise subjecting said coated substrate to a vacuum for sufficient time to effect drying of said coating layers.

Claim 9. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, ~~The method of claim 1~~ wherein said drying steps comprise heating said coated substrate at a predetermined temperature for sufficient time to effect drying of said coating layers.

Claim 10. (currently amended) The method of claim ~~1~~ 7 wherein said polycationic species are selected from the group consisting of polyethylenimine, poly(diallyldimethyl ammonium chloride), poly(allylamine hydrochloride), and poly(propylenimine) dendrimers.

Claim 11. (currently amended) The method of claim ~~1~~ 7 wherein said polyanionic species are selected from the group consisting of poly[1-[4-(3-carboxy-4-hydroxy-phenylazo)benzene sulfonamido]-1,2-ethanediyl, sodium salt], poly(acrylic acid), poly(styrenesulfonate), poly(4-[4-({4-[3-amino-2-(4-hydroxy-phenyl)-propylcarbamoyl]-5-oxo-pentyl}-methyl-amino)-phenylazo]-benzenesulfonic acid).

Claim 12. (currently amended) The method of claim ~~1~~ 7 wherein at least one solution further includes a surfactant and a resultant coating layer from said solution including said surfactant further includes said surfactant.

Claim 13. (currently amended) The method of claim ~~1~~ 7 wherein at least one solution further includes a dye molecule and a resultant coating layer from said solution including said dye molecule further includes said dye molecule.

Claim 14. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, ~~The method of claim 1~~ wherein said uncharged polymer species are selected from the group consisting of poly(vinylpyrrolidinone), polysaccharides, and biopolymers.

Claim 15. (original) The method of claim 6 wherein trilayer thicknesses in said polycationic layer/polyanionic layer/polyanionic layer structure are about equal.

Claim 16. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, ~~The method of claim 1~~ wherein at least one water-soluble polymer includes a chromophore.

Claim 17. (original) The method of claim 16 wherein said multilayer thin film heterostructure is a non-linear optical structure.

Claim 18. (new) The method of claim 9 wherein said plurality of layers includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure.